

ENGINEERING EXHIBIT

Application for Post-Transition Digital Television Station Construction Permit

prepared for

CBS Broadcasting Inc.

WBBM-DT Chicago, IL

Facility ID 9617

Ch. 12 8 kW 497 m

CBS Broadcasting Inc. (“*CBS*”) is the licensee of television station WBBM-TV, analog Channel 2 and digital Channel 3, Chicago, IL. *CBS* herein proposes construction of the WBBM-DT post-transition digital facility on Channel 12. This channel was established in Appendix B of the Seventh Report and Order in MB Docket 87-278.

The instant proposal specifies an effective radiated power (“ERP”) of 8 kW at 497 meters antenna height above average terrain (“HAAT”), with a nondirectional antenna. The proposed coverage extends beyond that of the Appendix B parameters of 3.2 kW ERP and 497 meters HAAT. The Appendix B facility contour location falls short of the WBBM-TV analog Channel 2 Grade B contour.

The proposed digital Channel 12 operation will employ an existing non-directional antenna system, presently licensed for use by the analog WTTW(TV) (Ch. 11, Facility ID 10802, Chicago, IL). WTTW-DT will remain on its present Channel 47 in the post-transition period and leave its existing analog antenna for use by WBBM-DT.

The antenna is on a rooftop antenna supporting structure on the Sears Tower office building in downtown Chicago, having FCC Antenna Structure Registration (“ASR”) number 1032960. No change to the overall structure height and no tower work are required to carry out this proposal.

A map is supplied as **Figure 1**, which depicts the standard predicted coverage contours. This map includes the boundaries of Chicago, WBBM-DT’s principal community. As demonstrated

thereon, the proposed facility complies with §73.625(a)(1), as the entire principal community will be encompassed by the 43 dBμ contour.

The proposed WBBM-DT facility's predicted service population provides a 102.3 percent match of the Appendix B facility, as detailed in the table below.

Population Summary (2000 Census) OET Bulletin 69 method	Appendix B	Proposed
Within Noise Limited Contour	9,425,338	9,600,711
Not affected by terrain losses	9,416,028	9,596,354
Lost to all interference	48,458	12,200
Net DTV Service	9,367,570	9,584,154
Match of Appendix B	---	102.31%

Freeze Waiver Request

A waiver of the Commission's August 3, 2004 "freeze" concerning expansion in service area¹ is requested. The proposal complies with the criteria for a freeze waiver request outlined in the Report and Order in the Third Periodic Review.² WBBM-DT will change channel for post-transition operation and will employ an existing analog antenna.³

The map attached as **Figure 2** supplies a comparison of the 36 dBμ digital service contour corresponding to the proposed WBBM-DT facility and the Appendix B parameters. As shown thereon, the amount of contour extension does not exceed five miles at any azimuth.

Absent the waiver, the WBBM-DT ERP would have to be reduced to 3.2 kW to avoid a contour extension. At this power level, the resulting DTV service contour would not cover 95,908 persons within a land area of 1,238 sq. km that are presently within the WBBM-TV analog Grade B contour. The potential loss area is depicted in **Figure 2A**.

¹Public Notice "Freeze on the Filing of Certain TV and DTV Requests for Allotment or Service Area Changes," DA 04-2446, released August 3, 2004.

²Third Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, MB Docket No. 07-91, FCC 07-228, released December 31, 2007.

³FCC Staff have informally advised that stations such as WBBM-DT that are changing channel to a channel other than its analog channel are also eligible for a waiver under the "5 mile" policy.

A detailed interference study per OET Bulletin 69⁴ shows that the proposal complies with the 0.5 percent limit of new interference caused to other stations' Appendix B facilities, as summarized below. **Pursuant to §73.616(e)(1), FCC processing of this proposal is requested on the basis of a 1 km cell size.**

Post-Transition Interference Analysis Summary (Cell Size = 1 km)

Ch	Call Sign	State/City Facility ID	Power (kW) HAAT (m)	Dist (km) Bear (°T)	Appendix B	
					Baseline Population (2000 Census)	New Interference From Proposal Population Percent
11	WLFI-DT	IN LAFAYETTE 73204	30 214	186.4 152.3	--- no interference caused ---	
11	WGVU-DT	MI GRAND RAPIDS 24784	50 238	186.9 49.3	--- no interference caused ---	
11	WMSN-DT	WI MADISON 10221	15 471	203.7 310.7	--- no interference caused ---	
12	WINM-DT	IN ANGOLA 67787	16.5 132	240.6 100.4	868,809	3,276 0.38%
12	KIIN-DT	IA IOWA CITY 29095	17.8 439	308.5 268.0	1,112,756	5,039 0.45%
12	WJRT-DT	MI FLINT 21735	13.7 287	329.8 61.6	2,098,947	93 0.00%
12	WKRC-DT	OH CINCINNATI 11289	15.6 305	405.8 138.2	--- no interference caused ---	
12	WBIJ-DT	WI CRANDON 81503	3.2 119	422.6 346.7	--- no interference caused ---	
13	WREX-DT	IL ROCKFORD 73940	12.4 216	140.6 289.9	1,450,661	2,926 0.20%
13	WZZM-DT	MI GRAND RAPIDS 49713	15.1 305	212.7 41.0	--- no interference caused ---	

⁴FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

Protection requirements towards authorized Class A stations are also satisfied. The only potentially affected Class A station is WOCK-CA (Ch. 13, Chicago, IL, 2.5 km distant). An OET Bulletin 69 interference analysis with a 1 km cell size and 1990 census shows that 0.49 percent additional interference would be caused to WOCK-CA, which does not exceed the FCC's 0.5 percent allowance. The Class A interference analysis results are provided below.

Results for: 13N IL CHICAGO		BLTVA	20021125AAU	LIC
		POPULATION	AREA (sq km)	
within Noise Limited Contour		2734987	1338.3	
not affected by terrain losses		2734987	1338.3	
lost to NTSC IX		611546	276.6	
lost to additional IX by ATV		0	0.0	
lost to all IX		611546	276.6	
Potential Interfering Stations Included in above Scenario				1
13N IL ROCKFORD	BLCT	1372	LIC	
13N IN INDIANAPOLIS	BLCT	19840626KE	LIC	
After Analysis				
Results for: 13N IL CHICAGO		BLTVA	20021125AAU	LIC
		POPULATION	AREA (sq km)	
within Noise Limited Contour		2734987	1338.3	
not affected by terrain losses		2734987	1338.3	
lost to NTSC IX		611546	276.6	
lost to additional IX by ATV		13455	7.0	
lost to all IX		625001	283.6	
Potential Interfering Stations Included in above Scenario				1
13N IL ROCKFORD	BLCT	1372	LIC	
13N IN INDIANAPOLIS	BLCT	19840626KE	LIC	
12A IL CHICAGO	USERRECORD01		APP	
Percent new IX =		0.4920%		

Maximum ERP

The proposed 8 kW ERP exceeds the maximum allowed for the proposed antenna HAAT of 497 meters currently permitted by §73.622(f)(6)(i). Section 73.622(f)(5) permits the maximum ERP to be exceeded in order to provide the same geographic coverage area as the largest station within the same market. The total area within the proposed WBBM-DT 36 dBμ contour is 34,613 square kilometers, which does not exceed the coverage contour areas of WPWR-DT (37,899 sq. km, Ch. 51, Gary, IN) or WFLD-DT (37,254 sq. km, Ch. 31, Chicago, IL). **Figure 3** provides a contour map of these stations, which are presently licensed and will remain on their current digital channels post-transition. Thus, the 8 kW ERP specified herein is in compliance with §73.622(f)(5) of the Commission's Rules.

Other Allocation Considerations

The nearest FCC monitoring station is 160 km distant at Allegan, MI. This exceeds by a large margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with “quiet” zones specified in §73.1030(a) and (b). There are no AM stations within 3.2 kilometers of the site, based on information contained within the Commission’s database. The site location is within the Canadian coordination zone (370 km to the Canada border), thus further international coordination may be necessary beyond that to establish Appendix B parameters.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed WBBM-DT will employ an existing antenna system atop the Sears Tower in downtown Chicago. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. No change in structure height is proposed. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission’s rules.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission’s OET Bulletin Number. 65. Based on OET-65 equation (10) and the worst-case of 100% field at downward elevations, the calculated signal density near the Sears Tower at two meters above ground level attributable to the proposed facility is $1.0 \mu\text{W}/\text{cm}^2$, which is 0.5 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in §1.1307(b)(3) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal’s contribution is less than five percent. When the antenna’s elevation pattern is considered, the level of RF exposure will be much lower.

Access to the Sears Tower rooftop, antenna support structures, and any areas within the building that may exceed exposure limits is strictly controlled by the building owner. *CBS* will participate in the building’s RF exposure safety program along with the other broadcasters and FCC

licensees that utilize the Sears Tower as a transmission site. As necessary, based on calculations or actual measurements considering all emitters, exposure abatement procedures will be confirmed and amended as necessary. The RF safety program will be employed protecting maintenance and installation workers from excessive exposure when work must be performed in locations where high RF levels may be present. Such areas have been placed under strict restricted access and properly identified.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. The applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, mast or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

Certification

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.

Joseph M. Davis, P.E.
March 27, 2008

Chesapeake RF Consultants, LLC
11993 Kahns Road
Manassas, VA 20112
703-650-9600

List of Attachments

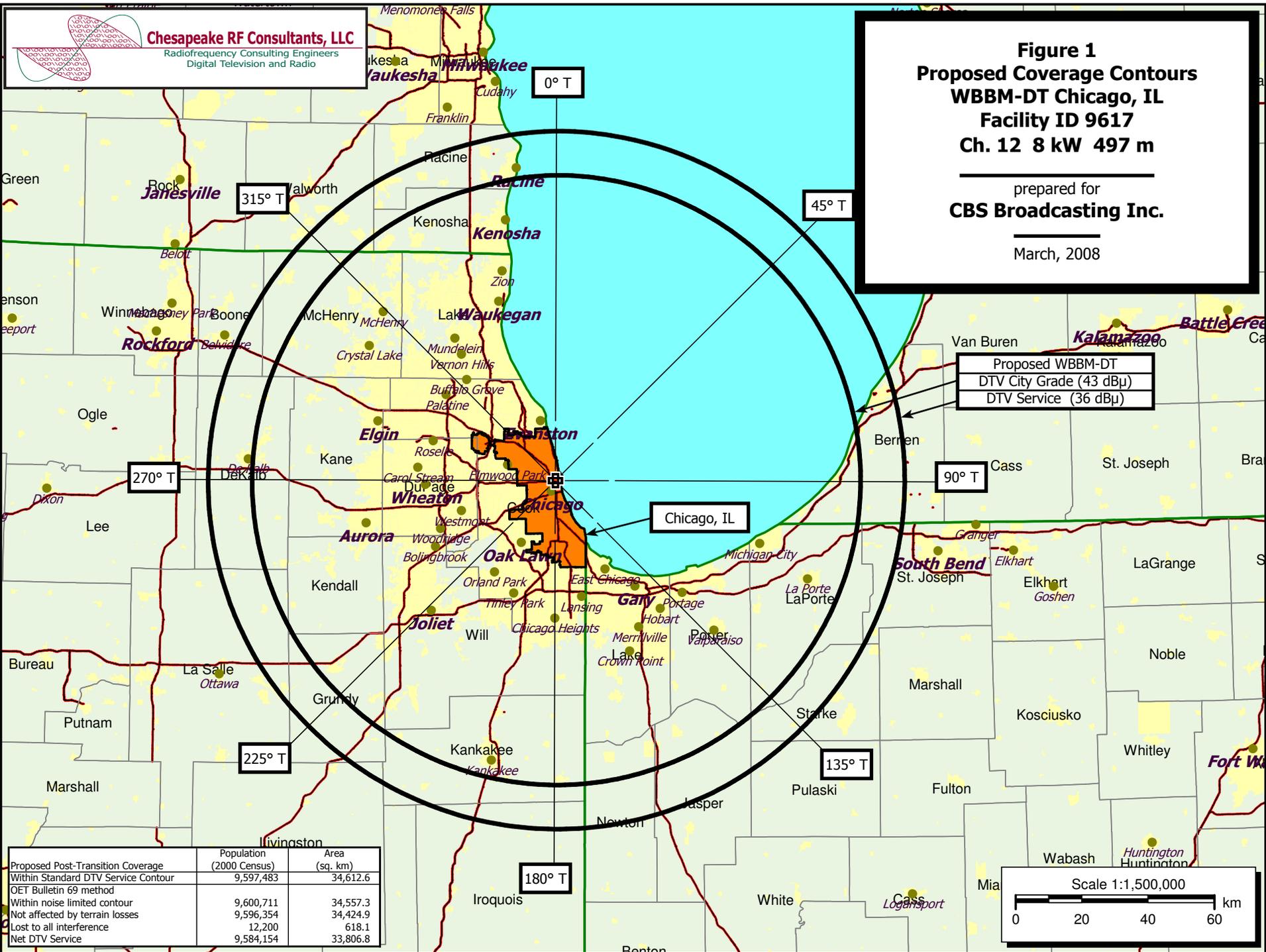
Figure 1	Proposed Coverage Contours
Figure 2	Coverage Contour Comparison
Figure 2A	Potential Loss Area Without Waiver
Figure 3	Largest Station in Market
Form 301	Saved Version of Engineering Sections from FCC Form at Time of Upload

This material was entered March 27, 2008 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

Figure 1
Proposed Coverage Contours
WBBM-DT Chicago, IL
Facility ID 9617
Ch. 12 8 kW 497 m

prepared for
CBS Broadcasting Inc.

March, 2008



Proposed WBBM-DT
 DTV City Grade (43 dBμ)
 DTV Service (36 dBμ)

	Population (2000 Census)	Area (sq. km)
Proposed Post-Transition Coverage		
Within Standard DTV Service Contour	9,597,483	34,612.6
OET Bulletin 69 method		
Within noise limited contour	9,600,711	34,557.3
Not affected by terrain losses	9,596,354	34,424.9
Lost to all interference	12,200	618.1
Net DTV Service	9,584,154	33,806.8

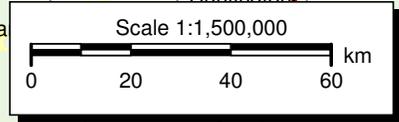
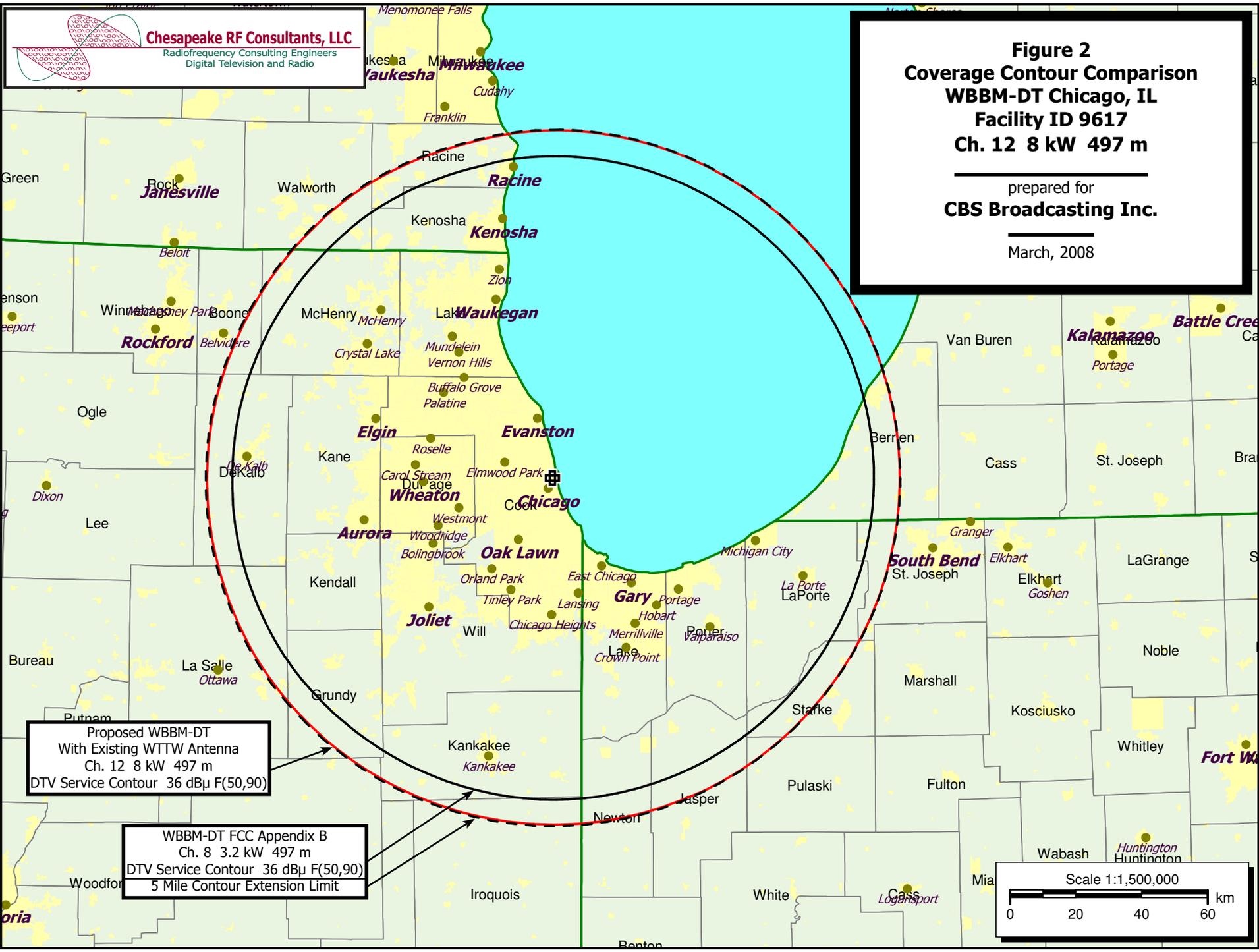


Figure 2
Coverage Contour Comparison
WBBM-DT Chicago, IL
Facility ID 9617
Ch. 12 8 kW 497 m

prepared for
CBS Broadcasting Inc.

March, 2008



Proposed WBBM-DT
 With Existing WTTW Antenna
 Ch. 12 8 kW 497 m
 DTV Service Contour 36 dBμ F(50,90)

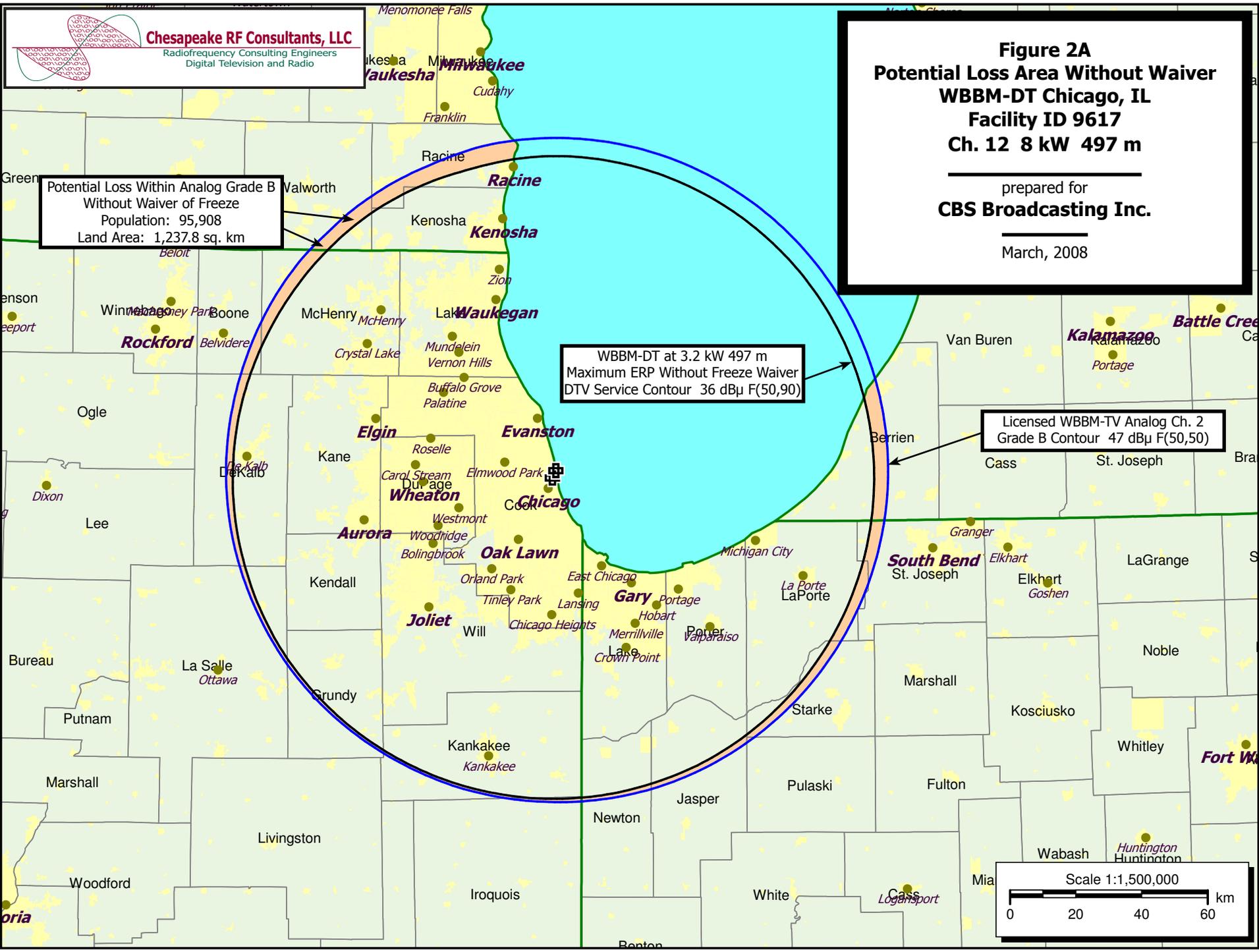
WBBM-DT FCC Appendix B
 Ch. 8 3.2 kW 497 m
 DTV Service Contour 36 dBμ F(50,90)
 5 Mile Contour Extension Limit

Scale 1:1,500,000
 0 20 40 60 km

Figure 2A
Potential Loss Area Without Waiver
WBBM-DT Chicago, IL
Facility ID 9617
Ch. 12 8 kW 497 m

prepared for
CBS Broadcasting Inc.

March, 2008



Potential Loss Within Analog Grade B
 Without Waiver of Freeze
 Population: 95,908
 Land Area: 1,237.8 sq. km

WBBM-DT at 3.2 kW 497 m
 Maximum ERP Without Freeze Waiver
 DTV Service Contour 36 dBμ F(50,90)

Licensed WBBM-TV Analog Ch. 2
 Grade B Contour 47 dBμ F(50,50)

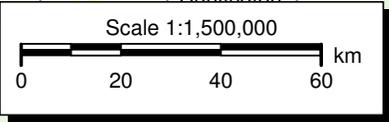
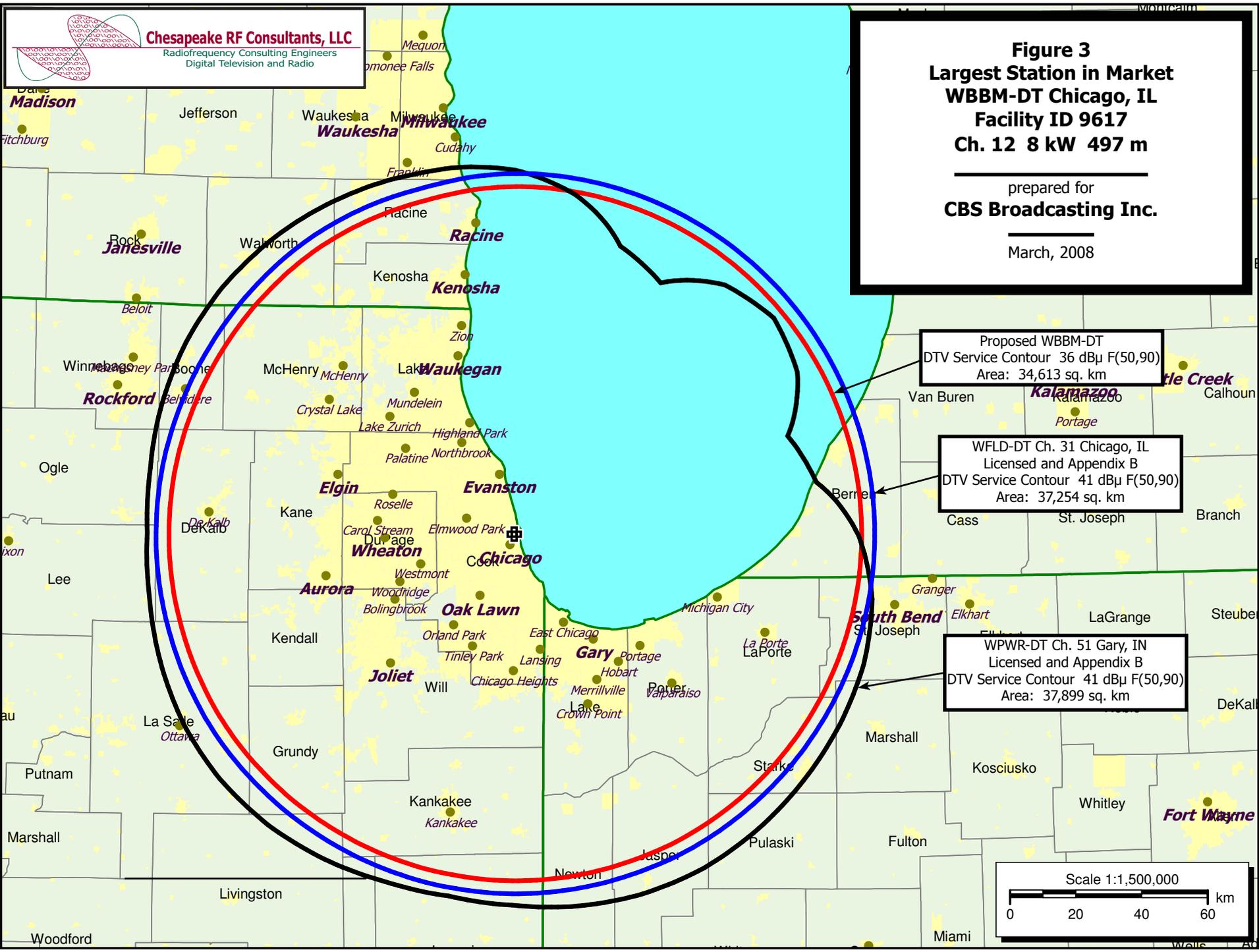


Figure 3
Largest Station in Market
WBBM-DT Chicago, IL
Facility ID 9617
Ch. 12 8 kW 497 m

prepared for
CBS Broadcasting Inc.

March, 2008



SECTION III-D - DTV Engineering	
Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.	
<p>Pre-Transition Certification Checklist: An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to change pre-transition facilities. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.</p> <p>Post-Transition Expedited Processing: An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.</p>	
1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:	
(a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.	<input checked="" type="radio"/> Yes <input type="radio"/> No
(b) It will operate a pre-transition facility from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input type="radio"/> No
(c) It will operate a pre-transition facility with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input type="radio"/> No
(d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A
(e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. Applicant must submit the Exhibit called for in Item 13.	<input checked="" type="radio"/> Yes <input type="radio"/> No
3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community.	<input checked="" type="radio"/> Yes <input type="radio"/> No
4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable.	<input checked="" type="radio"/> Yes <input type="radio"/> No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	<input checked="" type="radio"/> Yes <input type="radio"/> No

SECTION III-D - DTV Engineering	
TECHNICAL SPECIFICATIONS	
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.	
TECH BOX	
1. Channel Number:	DTV 12 Analog TV, if any 2
2. Zone:	<input checked="" type="radio"/> I <input type="radio"/> II <input type="radio"/> III
3. Antenna Location Coordinates: (NAD 27)	Latitude: Degrees 41 Minutes 52 Seconds 44 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 87 Minutes 38 Seconds 08 <input checked="" type="radio"/> West <input type="radio"/> East
4. Antenna Structure Registration Number: 1032960	<input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level:	181.4 meters
6. Overall Tower Height Above Ground Level:	521.1 meters
7. Height of Radiation Center Above Ground Level:	498.6 meters
8. Height of Radiation Center Above Average Terrain :	497 meters
9. Maximum Effective Radiated Power (average power):	8 kW
10. Antenna Specifications:	

a. Manufacturer HAR Model TAD-5H	
b. Electrical Beam Tilt: 1 degrees <input type="checkbox"/> Not Applicable	
c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). [Exhibit 42]	
d. Polarization: <input checked="" type="radio"/> Horizontal <input type="radio"/> Circular <input type="radio"/> Elliptical	
e. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional)	
[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.] [Relative Field Values]	
If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. Exhibit required. [Exhibit 43]	
11.	Does the proposed facility satisfy the pre-transition interference protection provisions of 47 C.F.R. Section 73.623(a) (Applicable only if Certification Checklist Items 1(a), (b), or (c) are answered "No.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616? <input checked="" type="radio"/> Yes <input type="radio"/> No If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers. [Exhibit 44]
12.	If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if Certification Checklist item 3 is answered "No.") [Exhibit 45]
13.	Environmental Protection Act. Submit in an Exhibit the following: [Exhibit 46] If Certification Checklist Item 2 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site. By checking "Yes" to Certification Checklist Item 2, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines. If Certification Checklist Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.
PREPARERS CERTIFICATION ON SECTION III MUST BE COMPLETED AND SIGNED.	

SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.	Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature	Date 3/27/2008	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 11993 KAHNS ROAD		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20112 -
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).